UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF MICHIGAN
SOUTHERN DIVISION

JEFFREY TODD KNUDSON,

Plaintiff,

v.

M/V AMERICAN INTEGRITY, Official Number 592377, IMO # 7514696, *in rem*, and AMERICAN STEAMSHIP COMPANY, a New York corporation, *in personam*,

Defendants.
/

IN LAW AND IN ADMIRALTY

Case No. 2:14-cv-14854-GCS-RSW
Judge George Caram Steeh

Jess G. Webster (*Pro Hac Vice*)
(WA State Bar Assn. #11042)
MILLER NASH GRAHAM & DUNN LLP
Pier 70, 2801 Alaskan Way, Suite 300
Seattle, WA 98121-1128
(206) 624-8300 / Fax (206) 340-9599
jess.webster@millernash.com

Dennis M. O'Bryan
O'BRYAN BAUN KARAMANIAN
Co-Counsel for Plaintiff
401 S. Old Woodward, Ste. 463
Birmingham, MI 48009
(248) 258-6262 / 0647 Fax
dob@obryanlaw.net

Attorneys for the Plaintiff Jeffrey Todd Knudson

Paul D. Galea (P29250)
Sarah V. Beaubien (P76142)
GALLAGHER SHARP LLP
211 West Fort Street, Suite 660
Detroit, Michigan 48226
(313) 962-9165 / Fax: (313) 962-9167
pgalea@gallaghersharp.com
sbeaubien@gallaghersharp.com

Markus E. Apelis (P80275)
GALLAGHER SHARP LLP
Bulkley Building – Sixth Floor
1501 Euclid Avenue
Cleveland, Ohio 44115
Phone: (216) 241-5310
Fax: (216) 241-1608
mapelis@gallaghersharp.com

Attorneys for the Defendants M/V AMERICAN INTEGRITY and American Steamship Company

DECLARATION OF DR. STEVEN WIKER IN SUPPORT OF PLAINTIFF'S RESPONSE TO DEFENDANTS' MOTION FOR PARTIAL JUDGMENT ON THE PLEADINGS, OR ALTERNATIVELY, MOTION FOR PARTIAL SUMMARY JUDGMENT

I, Steven F. Wiker, Ph.D., CPE, declare as follows:

1. I am a retired engineering faculty who founded and directed safety engineering and ergonomics programs at the Universities of Washington and West Virginia. I am and industrial engineer and physiologist who specializes in ergonomics and safety engineering and hold a doctorate degree in industrial and operations engineering from the University of Michigan. I taught safety and human factors engineering, occupational biomechanics, accident reconstruction, and related courses since the late 1980s, conducted safety engineering and ergonomics research, and have served as a consultant to Occupational Safety and Health Administration (OSHA) and the National Institutes for Safety and Health (NIOSH) for nearly 40 years. I have attached my curriculum vitae.

2. I am also a retired Coast Guard Commander who served on active duty for nearly 5 years and remained in the active reserves for the remainder of my service. I commanded maritime vessel inspection, port safety and search and rescue units on the Great Lakes. I am very familiar with the maritime environment, boatswain's chairs and rigging, and taught fall arrest system design as a

faculty member. I inspected the equipment used at the time of Mr. Knudson's fall accident, the process by which the defense transferred crew from the weather deck to the lock working surface far below, and was asked if the defense could have provided a safer or safe means of crew transfer from the vessel to the lock. It is my understanding that I may serve as an expert witness for the Plaintiff in the above captioned action.

3. It is my understanding that the defense has submitted a motion for partial summary judgment motion arguing that ASC has not met the criteria for punitive damages. I have been asked to construct and submit a declaration addressing the standard of care provided by industry at large regarding protection of crew or workers from falls of the type experienced by Mr. Knudson and that provided by ASC. From a safety engineering perspective, and based upon the definitions provided, see attachment provided to me, ASC has acted in a grossly negligent manner, demonstrated willful indifference, and demonstrated a callous disregard for their crew's safety. In the following paragraphs I provide the rationale for my assessment as a safety professional.

4. I was asked to address whether ASC's failure to provide a safe means of crew transfer from the ship to the lock below demonstrated negligence to the extent that it would be considered an egregious failure to meet their duty to provide a workplace that was free from recognizable and severe hazards. An egregious degree of negligence would be characterized by refusing to recognize, un-

derstand and eliminate or acceptably mitigate an extreme hazard (i.e., potentially lethal or capable of producing massive injury and permanent disability) that is easily recognized by both low-level practitioners within the field of safety engineering and pedestrians or reasonable humans in the public. Moreover, egregious behavior would be demonstrated by ASC if their behavior demonstrated blatant indifference or a callous response to an extreme and highly recognizable hazard prior to and following a history of the type of accident experienced by Mr. Knudson.

5. Finally, egregious negligence would be demonstrated by ASC's blatant or willful indifference to and ignoring well-established understanding and knowledge that their method for crew transfer from the ship to the lock service 30 to 35 feet below presented an extreme fall and injury hazard. The hazard I observed violated well-known safety standards and regulations addressing fall arrest requirements for heights of 6 feet or more. This hazard would very likely, or probably, result in death or severe injury depending upon the height of the free fall and the velocity of the fall.

6. I received a definition of recklessness, wanton, willful, reckless neglect, and gross negligence that courts have used to make determination as to whether punitive damages are warranted and have attached it to this declaration. My definition of egregious negligence demonstrated by ASC is consistent with the definition of recklessness, wanton, willful, reckless neglect, and gross

negligence.

7. I have reviewed the facts and circumstances surrounding the accident that is the subject of this legal action, to wit: Mr. Knudson being dropped will being lowered from the deck of the AMERICAN INTEGRITY to the pier face at the Soo locks, including, but not limited to:

a) Interview with the Plaintiff Jeffrey Todd Knudson;

b) Review of transcript of deposition of Plaintiff Jeffrey Todd Knudson taken in this action;

c) Review of transcript of deposition of the responsible safety officer of American Steamship Company, Mr. Thomas Anderson;

d) Review of transcript of deposition of Mr. Olney, the first mate of the AMERICAN INTEGRITY responsible for dropping Mr. Knudson;

e) Review of transcript of deposition of the safety officer of American Steamship Company, Mr. Thomas Anderson;

f) Inspection of the lowering boom, rigging and bosun's chair involved in the accident leading to Mr. Knudson's injury;

g) Review of the Report of Serious Marine Incident, USCG Form 2692, relating to Mr. Knudson's injury.

8. Falls from height are well known and understood within the fields of Safety Engineering and Safety Management. The World Health Organization (WHO) as well as all safety organizations and government agencies tasked with prevention of fall accidents and injuries have all determined that falls are the second leading cause of accidental or unintentional injury deaths worldwide[1]. Only automobile accidents kill more people than fall accidents. Each year an estimated 424,000 individuals die from falls globally of which over 80% are in third-world countries that either do not promulgate or enforce fall prevention standards and regulations. Though not fatal, 37.3 million falls are severe enough to require medical attention occur each year and over 17 million DALYs (disability-adjusted life years) are typically lost; demonstrating the magnitude of the cost of falls that face industry and society at large. In 2011, a total of 4,693 fatal work injuries involving falls from height were reported in the US.

9. The number of vendors in the United States that develop, construct and sell fall prevention and fall arrest equipment is huge. At any American Society of Safety Engineering Annual Conference or other like society conferences, vendors provide booths and company experts to advocate purchase of their equipment for protection from falls from height (i.e., fall arrest harnesses, equip-

1. http://www.who.int/mediacentre/factsheets/fs344/en/

ment, and training programs). Those vendors can account for nearly 70 percent of all vendors attending the conference who display their products. Nobody in the field of safety can escape the magnitude of the problem and the level of energy that has been expended by relevant federal agencies, industry and vendors responding the need for protection related to falls from height.

10. Historically, concerns regarding falls from height developed in the 1920s and 1930s when multistory buildings began to propagate across the US. The Occupational Health and Safety Act (OSHA) promulgated in 1970, expressly dealt with fall protection in the workplace, provided relevant regulations, national consensus standards addressing falls from height prevention were inculcated into the OSHA regulations, and the OSHA General Duty Clause required employers to provide workers with a workplace that was free from recognizable hazards such as falls from height.

11. After 1970, regulatory and litigation costs and consequences drove American industry into adopting fall protection for workers.

During the 1970s and 1980s, the use of safety body belts became the norm for workers who were required to perform tasks at height. The construction industry added the protection by adoption of the “100% tie-off” rule. Ongoing research and developmentt in the 1990s by NIOSH and university researchers, related to fall protection, showed that body belts attached to lanyards resulted in spinal and internal organ injuries that could result from even short periods of suspen-

sion from a body belt. The problem was widely known to industry and pursuit to improve fall arrests without side effects was aggressive given the scope of the hazard.

12. Advances in the materials used in the construction of safety lines and harnesses made them more comfortable, able to hold heavier workers, more resistant to wear and tear from weather and exposure to corrosives and abrasives, and reduced risks associated with line parting associated with manila lines. Self-retracting and "spring-like" or stretching lanyards were developed and deployed to reduce fall distances, decelerations and sudden stops or jerks to the body as the fall was arrested. Improved worker training and safety awareness, including development of effective fall rescue plans, were developed that coincided with material reduction in incidence and severity of fall-related injuries and fatalities in the workplace.

13. The aforementioned history and development of regulations was well known throughout general industry and the maritime environment. ASC's safety professionals, such as Mr. Anderson, could not escape knowledge of the falls from height hazard that was associated with the transfer operation that injured Mr. Knudson. The hazard Mr. Knudson faced demonstrated a high probability that any failure in the sequence of operation would result in a fall from height that would result in death or severe injury. The magnitude of the hazard and its severe consequences are very well known within the field. To deny knowledge

of this problem would require one to negate at least 6 decades of fall from height hazard prevention, regulatory promulgation and enforcement efforts, and widespread professional and informational programs addressing the hazard.

14. Mr. Anderson reported that he regularly read safety journals and attended meetings. If so, he had to have a working knowledge of fall from height hazards, how to detect them, and how to control them (See page 15 of his deposition). Mr. Anderson is also a Certified Safety Professional (CSP). Attaining a CSP designation that would require that he understood a broad range of safety hazards and how to prevent them; including falls from heights (See page 12 of his deposition). He had to take a comprehensive examination for his CPE that would have required that he demonstrate by test answers an understanding of falls from heights, how to recognize those hazards, and how to prevent them.

15. When asked in his deposition if he had performed any safety evaluation of the operation associated with Mr. Knudson's fall, Mr. Anderson answered that he had not, and that nobody had done so within the company (page 26). That is contrary to his training and professional requirements as a safety professional. One cannot argue that a task or job is safe unless there a formal analysis of the job was performed following standard job safety analysis protocols. Mr. Anderson reports that he simply eyeballed the task and determined that there was no hazard. That is a stunning claim because the hazards are clearly obvious.

16. A common person, or pedestrian, could detect the presence of a fall from height hazard with the operation that resulted in Mr. Knudson's fall. Without any training in safety a reasonable individual looking at the task would be able to point out: a) parting of a single landing line that had no backup line would create a free-fall hazard, b) Mate miscommunication to the crewman regarding when to move outboard of the ship could result in a fall if the crewman departed the deck prematurely before the mate had established control of the line used to lower him, c) the quality of the crewman's swing outboard of the ship's deck and vertical alignment with the desired landing area below could create a fall or landing mishap, d) Mate's inability to maintain sufficient grasp force and payout control of the single line during normal and unexpected rapid descents could create a drop and fall accident, e) misalignment and inappropriate landing speeds causing the seated crew member to fail to land as desired could create a fall forward, backward or to the side during landings and chair dismounts, and f) crewman's loss of competent grasp of the vertical rod would cause a crewman to fall off of the boatswain's chair. The court doesn't need me to come in and show the hazard(s) involved with this operation, the hazards are so clear and obvious that a jury can make that determination on their own. One of my professors used to say at times of clear and obvious hazards, "Why even a blind mule could see the hazard!" That is certainly the case in this case.

17. Mr. Anderson, who should be able to recognize the hazards with the transfer operation that resulted in Mr. Knudson's fall accident and injury, claimed that such an operation was not hazardous, was very safe, and one of the safest in his industry on the Great Lakes (see deposition page 45). Yet he acknowledged that at least three fall from height accidents had occurred with the operation in question due to at least one of the hazards noted above that a common person could recognize. That claim is stunningly incorrect and has to reflect an absolute resistance to recognize or deal with the hazard ASC created.

18. ASC took no action to correct the hazards and failure modes that had created prior accidents before Mr. Knudson's accident. That is an example of egregious indifference in refusing to acknowledge the presence of an extreme and potentially lethal hazard that a pedestrian could detect. Even if one could claim that they failed to recognize the presence of a clear hazard, safety protocols require companies like ASC to monitor their accidents and respond by determine root causes and implementing prevention protocols and personal protective equipment if required. ASC simply took no action. The level of indifference and willful neglect and response to the highly recognizable hazard goes well beyond the norm of companies that act negligently with regard to fall from height hazard protection.

19. ASC knew the hazard was present and simply turned a blind eye to a clear and obvious fall from height hazard. Mr. Anderson reported any potential

fall over 6 feet was very hazardous, yet he took no action to control or arrest the fall hazard before Mr. Knudson's accident. Using Mr. Anderson's logic, there was no hazard even if the fall distance was clearly many multiples of 6 feet. He and ASC continued to deny and not respond the hazard until at least three accidents and injuries had occurred, and a lawsuit was filed. When I inspected the operation, no fall arrest efforts had been made for the operation that resulted in Mr. Knudson's fall accident.

20. ASC demonstrated callous disregard for human life by not responding to previous accidents and injuries associated with the hazard, and stubbornly and willfully ignoring the presence of a demonstrated hazard (via accident occurrence) and intentionally refusing to correct the problem as required by safety regulations and standards.

21. Mr. Olney, who was in charge of the operation, had no formal training regarding how to conduct the operation in a safe and controlled manner. He didn't know how he should wrap the line about the "crucifix" and had no plan to save Mr. Knudson from a fall to the concrete below if Mr. Olney fell or lost control of the line, as he ultimately did, if the manila line parted, which is not to be used for this type of operation, or if Mr. Knudson's stepping off of the deck was premature or resulted in a swing collision into the hull of the ship. ASC failed to provide even basic training regarding safe operations in this situation. ASC simply expected the third-mate to figure it out on his own. That is a strict violation

of safety engineering practice and the tenants of safety program management that require safety training if the hazard cannot be designed out per ISO Standards regarding the hierarchy of engineering safety.

22. While Mr. Olney had a grasp of basic seamanship, he had not been trained to perform this operation. By analogy, what he was asked to do would be no different than taking a medical intern, who has a basic grasp human anatomy, and have the intern remove an appendix from a patient without any prior instruction about the procedure and technique, without understanding the nature of instruments required, without a comprehensive understanding of what can go wrong during that surgical procedure, and without instruction regarding how to prevent or respond to a surgically-induced error and resulting patient extremis. Such gross negligence would result in termination of all medical internships and residences at that facility if that was their norm. ASC's refusal to provide safety training for this operation represents a further example of gross neglect, willful indifference for the welfare of Mr. Knudson and those would be responsible for an accident caused by untrained actions. That approach is grossly antithetical to safety program objectives and approaches that are accepted throughout industry as a whole.

23. OSHA regulations for fall prevention apply to vessel owners while vessels undergo pier side maintenance and repair, but do not apply when vessels are operating, during which time US Coast Guard (USCG) regulations apply. How-

ever, per a memorandum of agreement between OSHA and USCG, USCG regulations may be used in lieu of OSHA regulations, at the discretion of the USCG, where there is overlap. If the USCG does not have a specific regulation addressing this fall from height hazard, the USCG has the discretion, right and authority to cite the vessel and force compliance with OSHA regulations. The presence of specific OSHA regulations addressing the operation involved with Mr. Knudson's accident demonstrate notice, feasibility and clear rationale for eliminating the hazards that faced Mr. Knudson.

24. ASC clearly created an maintained a hazardous crew transfer process for lowering a crewman some 30 to 35 feet below the weather deck to the concrete surface below. No fall arrest mechanisms or equipment were in place, and nobody on the detail had any formal or specific training for conduct of this operation in a safe manner it been made safe. Preventing a fall from height accident is one of the top two responsibilities for safety professionals in terms of accident prevention in the workplace. The hazard presents real risk of death and serious bodily injury with the potential for severe life disabling and changing injuries. Such hazards are inescapable in terms of government communication with industry, regulations and national and international consensus standards aimed at identifying and preventing falls from height, and a common person could recognize and understand the potential for a fall from height accident associated with ASC's transfer operation.

25. Yet, Mr. Anderson, a CSP and professional charged with ship crew safety, claimed there was no hazard and no need to change the operation from the standpoint of preventing fall accidents. He had no hazard evaluation program in place and made no effort to examine this operation from a safety perspective. He failed to track accident and injury history associated with this task. Even after acknowledging that fall from height accidents and injuries had occurred prior to Mr. Knudson's accident, he and ASC ignored those strong indicators of hazard and took no action to eliminate or materially mitigate the hazard. He and ASC simply did nothing.

26. Professionals in my field and societies focused upon workplace safety would consider such actions as willful and reckless indifference to the health and safety of their crews, and exemplars of gross negligence. I have encountered a number of bad actors who failed to meet their duty with regard to preventing falls from heights, and I have defended others who were falsely accused of not meeting those duties. However, I have never encountered the magnitude of gross negligence, willful indifference regarding the welfare of crews and workers who work at heights without adequate fall arrest protection. The insensate behavior of ASC and its blatant disregard for well known regulations and safety principles aimed at protecting workforces from falls, are are from the normal level of negligence encountered. I am simply stunned by ASC's failure to even make a modicum of an effort to protect Mr. Knudson, and particularly their willful

ignoring of the accidents that resulted from their unsafe design. Many companies claim that the accident was caused by the worker because the worker did not follow their training. In this case, ASC didn't even bother to provide any relevant training!

27. It is my opinion that ASC's failure to incorporate fall protection equipment, appropriate rigging and line for the boatswain's chair (nonmanila line), an absence of safe procedure training, demonstrates a willful and reckless indifference to the welfare of its seamen employees, and to be a willful and callous failure to fulfill its duties to provide its seamen employees a safe and seaworthy vessel on which to serve.

I declare under the penalty of perjury under the laws of the United States of America that the foregoing statements of fact are true and correct to the best of my knowledge.

DATED this 29th day of March, 2017, at 8214 Mount Logan Ct, Las Vegas, NV 89131.

Steven F. Wiker, Ph.D., CPE

CERTIFICATE OF SERVICE

I hereby certify that on March 29, 2017, I caused a copy of this document to be served upon all parties of record, and that such service was made electronically upon each counsel of record so registered with the United States District Court and, if applicable, via email to:

Paul D. Galea (P29250)
Gallagher Sharp
211 West Fort Street, Ste. 660
Detroit, MI 48226
(313) 962-9160 / 9167 Fax
pgalea@gallaghersharp.com; kwerner@gallaghersharp.com

Sarah V. Beaubien (P76142)
Gallagher Sharp, LLP
420 Madison Avenue, Suite 1250
Toledo, OH 43604
(419) 241-4864 / 4866
sbeaubien@gallaghersharp.com

Markus E. Apelis (P80275)
GALLAGHER SHARP LLP
Bulkley Building – Sixth Floor
1501 Euclid Avenue
Cleveland, Ohio 44115
Phone: (216) 241-5310
Fax: (216) 241-1608
mapelis@gallaghersharp.com

/s/ Jess G. Webster
Jess G. Webster, WSB No. 11402
Miller Nash Graham & Dunn LLP
Pier 70, 2801 Alaskan Way, Suite 300
Seattle, WA 98121-1128
Telephone: 206.624.8300

Fax: 206.340.9599
Email: jess.webster@millernash.com
Attorneys for Plaintiff

STEVEN F. WIKER, PH.D., CPE

877-ERGOTEK (374-6835)

wiker@ergotek.net

PROFILE

Dr. Wiker conducts basic and applied research, consults and taught in the fields of ergonomics/human factors, occupational biomechanics and safety engineering. The objectives of his research are to improve worker health, safety, and performance by improving working environment, equipment, and job design. His efforts have focused upon the identification and control of performance, safety and health problems that arise from biomechanical, physiological, or perceptual-cognition-motor problems that are encountered in the industrial workplace, aboard automobiles, aerospace and marine vehicles, or when using consumer products. Efforts are often incorporated into: a) design guidelines, specifications or standards, b) computer-models for hazard identification and implementation of administrative or engineering controls of biomechanical, physiological, and perceptual-motor related performance, health, and safety problems, c) improved design and usability of equipment, products and automobile, marine and aerospace vehicles and c) construction of textbooks and design handbooks.

EDUCATION

Ph.D. Industrial & Operations Engineering, University of Michigan, Ann Arbor 1986

M.S. Industrial & Operations Engineering, University of Michigan, Ann Arbor 1982

M.S. Biological Sciences (physiology), George Washington University 1981

B.S. Physiology, University of California, Davis 1975

HONORS AND AWARDS

1. Pan-Hellenic Top Ten University Faculty of 2008
   College of Engineering, West Virginia University
2. Alpha Pi Mu, Industrial Engineering Honor Society
3. Tau Beta Pi, Engineering Honor Society
4. Senior Member, Institute of Industrial Engineers
5. Sigma Xi, Life Member
6. Editorial Board, International Industrial Ergonomics Journal, J Virtual Reality
7. Outstanding Oral Technical Presentation Award, Society of Automotive Engineers Conference of Aerospace Manufacturing Technology 1997
8. Who's Who: Science & Engineering, Professional Safety, American Education, West, Mid-West, Emerging Leaders in America, and in the World
9. Center for Robotics and Integrated Manufacturing Fellowship 1981-1982
10. Chair, Industrial Ergonomics Technical Group, Human Factors and Ergonomics Society, 1995-1996

ATTACHMENT

11. Ford Motor Company Fellowship 1983-1985
12. International Chair, International Conference on Environmental Systems 1997
13. International Vice Chair, International Conference on Environmental Systems 1996
14. Men of Achievement 1986 to May-09
15. National Institutes of Occupational Health & Safety Traineeship 1979-1984
16. Technical Chair, American Institutes for Astronautics and Aeronautics, 1994-1995
17. United States Coast Guard, Humanitarian Service Medal, 1993
18. United States Coast Guard, Letter of Commendation, 1979
19. United States Coast Guard, Achievement Medal,1988
20. United States Coast Guard, Unit Commendation Medal 1990, 1992
21. United States Coast Guard, Achievement Medal, 1992

PROFESSIONAL EXPERIENCE

DIRECTOR, ERGONOMIC DESIGN INSTITUTE, SEATTLE, WASHINGTON (2010-PRESENT)

Serves as the Director and Chief Executive Officer with associated responsibilities. Administered and directed research and development, educational and consultation programs, and manages associated senior staff. Specific activities included representing the Institute, development of strategic development and research plans, financial operational planning, development or oversight of research and development programs, proposals and budgeting, and development of joint university, industrial and public sector teams.

PRINCIPLE, ERGOTEK, INC. (1987-PRESENT)

Consultant in the field of industrial engineering with focus upon subspecialties of biomechanics, ergonomics, human factors and safety engineering. Consultancies span product, equipment, environmental and task or job design in workplace, home and avocational environs. Consultations focus upon psychological, engineering, biomechanical, industrial design, graphical design, linear, nonlinear and multivariate statistics, operations research, human physiology and anatomy and anthropometry. Accident reconstruction, failure analysis, safety program and hazard countermeasure analyses are performed regularly. Goals of work are to enhance human performance and eliminate or reduce risk of human injury and property damage or loss.

ASSOCIATE PROFESSOR AND DIRECTOR, ERGONOMICS & SAFETY ENGINEERING PROGRAM AND ERGONOMICS LABORATORY. INDUSTRIAL AND SYSTEMS ENGINEERING, COLLEGE OF ENGINEERING & MINING RESOURCES, WEST VIRGINIA UNIVERSITY, MORGANTOWN, WEST VIRGINIA (2003 - 2010)

Directed academic and research program in ergonomics and safety engineering, and the Ergonomics Laboratory. Taught undergraduate, graduate and continuing education courses in industrial ergonomics, advanced human factors engineering, safety engineering and accident reconstruction; supervised graduate students, and directed, supervised, and funded research projects in ergonomics and safety engineering.

VISITING PROFESSOR, INDUSTRIAL AND SYSTEMS ENGINEERING, COLLEGE OF ENGINEERING & MINING RESOURCES, WEST VIRGINIA UNIVERSITY, MORGANTOWN, WEST VIRGINIA (2001-2002)

Taught undergraduate, graduate and continuing education courses in industrial ergonomics, advanced human factors engineering, safety engineering and accident reconstruction; supervise graduate students, and directed, supervised, and funded research projects in ergonomics and safety engineering.

DIRECTOR, ERGONOMIC DESIGN INSTITUTE, BELLEVUE, WASHINGTON (1997-2000)

Served as the Director and Chief Executive Officer with associated responsibilities. Administered and directed research and development, educational and consultation programs, and manages associated senior staff. Specific activities included representing the Institute, development of strategic development and research plans, financial operational planning, development or oversight of research and development programs, proposals and budgeting, and development of joint university, industrial and public sector teams. Served as the Head of ergonomics and safety engineering technical divisions.

ADJUNCT ASSOCIATE PROFESSOR, INDUSTRIAL ENGINEERING, COLLEGE OF ENGINEERING, UNIVERSITY OF WASHINGTON, SEATTLE, WASHINGTON (1997 - 2000)

Teach undergraduate, graduate and continuing education courses in industrial ergonomics, advanced human factors engineering, safety engineering and accident reconstruction; supervise graduate students, and directed, supervised, and funded research projects in ergonomics and safety engineering.

ASSOCIATE PROFESSOR, DEPARTMENT OF ENVIRONMENTAL HEALTH, SCHOOL OF PUBLIC HEALTH AND COMMUNITY MEDICINE, UNIVERSITY OF WASHINGTON, SEATTLE, WASHINGTON AND INDUSTRIAL ENGINEERING, COLLEGE OF ENGINEERING, UNIVERSITY OF WASHINGTON, SEATTLE, WASHINGTON (1997 - 2000) (1993 - 1997)

Developed and taught graduate and continuing education courses in industrial ergonomics, advanced human factors engineering, and safety engineering; supervised graduate students, and directed, supervised, and funded the Ergonomics Laboratory. Served as Director, Occupational Safety Program, Northwest Center for Occupational Safety and Health.

ASSISTANT PROFESSOR, DEPARTMENT OF INDUSTRIAL ENGINEERING UNIVERSITY OF WISCONSIN, MADISON, WI 53706 (1988-1994)

Developed and taught undergraduate and graduate courses in human factors engineering and industrial ergonomics, advising undergraduate and graduate students, directing, supervising, and funding the human performance and ergonomics research laboratory.

DIRECTOR, TELEROBOTICS LABORATORY, WISCONSIN CENTER FOR SPACE AUTOMATION & ROBOTICS, UNIVERSITY OF WISCONSIN, MADISON, WI 53706 (1991-1994)

Administration of the laboratory, engineering and scientific support staff, and research assistants; formulation and construction of research and development proposals; pursuit of funding from government and industrial sources; management and conduct of experimental research; publication of research findings, industrial consultation; development of joint university and industrial space commercialization projects; and development and supervision of space flight experiments.

HEAD, TELEOPERATOR ERGONOMICS LABORATORY (1986-1988) NAVAL OCEAN SYSTEMS CENTER, SAN DIEGO, CALIFORNIA

Established and served as a principal investigator in the Teleoperator Ergonomics Laboratory, NOSC, San Diego. Supervised research staff in basic and applied research and development efforts concerned with analysis of teleoperator workload and improvement of controls and information and software display systems for teleoperator and teleautonomous systems. Responsibilities included formulation and construction of research and development proposals, pursuit of funding from DOD and other governmental agencies, management and conduct of experimental research, publication of research findings, and periodic consultations on ergonomic or human factors engineering design problems. Served as principal investigator on the following projects: Teleoperator Remote Presence Systems (TOPS); Master Controller, Tactile Display, Tactile Sensor, and Teleoperator Performance Test Battery Development

SENIOR RESEARCH ENGINEER, JAMES M. MILLER ENGINEERING, ANN ARBOR, MICHIGAN 48109 (1980-1983)

Responsibilities included management and conduct of product and workplace design review, evaluation, and testing, as well as conduct of post-accident engineering forensic analyses with primary emphasis in product or workplace performance, health, and safety criteria. Typical activities included consultation with clients concerning product design or liability issues, preparing proposals, managing client accounts, designing and execution of product/workplace human factors/ergonomic analyses or accident reconstructions, and preparation of engineering reports or for depositions/testimony for clients.

RESEARCH PROGRAM MANAGER AND PRINCIPAL SCIENTIST, OFFICE OF RESEARCH AND DEVELOPMENT, U. S. COAST GUARD, WASHINGTON, DC(1976-1979)

Served as a principal investigator and program manager tasked with developing, managing, and conducting experimental research in the area of industrial and human factors engineering. Research programs in boat and ship task analysis, vessel control station and display panel design, thermal protective clothing design and immersion hypothermia treatment, visual distress signal design, recreational boat safety, and development of design guidance for ship design, were principal areas of responsibility.

MILITARY SERVICE

COMMANDER, U.S. COAST GUARD RESERVE, WASHINGTON, DC ACTIVE DUTY (1976-1980) AND ACTIVE RESERVE DUTY (1980-2000)

Served as Commanding, Executive, Readiness, Training, and Administrative Officers at Port Safety and Security, Vessel Augmentation, and Search and Rescue Units located in Toledo, OH, Honolulu, HI, Milwaukee, WI, Duluth, MN, or Detroit, MI. Responsible for all phases of the organization, management, and performance of the reserve units augmented regular units charged with port safety, vessel inspection, search and rescue and naval engineering duties. Led and supervised up to 11 officers and 70 enlisted personnel.

Professional Experience Indicators: Industrial Engineer, Search and Rescue, and Port Safety and Security.

NAVY HOSPITAL CORPSMEN ATTACHED TO U.S. MARINE CORPS ACTIVE DUTY (1971-1973) AND ACTIVE RESERVE DUTY (1973-1976)

RESEARCH FUNDING

PERIOD	ROLE	TITLE	AGENCY	FUNDING
2012-2014	PI	Ergonomic Analysis of Housekeeping Tasks	Hyatt Hotel Inc.	$171,710
2011-2011	PI	Ergonomic Analysis of Housekeepers	California Hotel and Lodging Association	$86,000
2007-2009	PI	Advanced Biomechanical and Cardiopulmonary Assessment Suit (ABACAS) Development Program	NIOSH	$192,000
2006-2007	PI	NAVAIR SWARM Human Factors Interface Design	NAVIAR via Augusta Systems	$50,000
2006-2007	PI	Advanced Biomechanical and Cardiopulmonary Assessment Suit (ABACAS) Development Program	NIOSH	$235,463
2006-2007	PI	NAVAIR SWARM Human Factors Interface Design	NAVAIR via Augusta Systems	$50,000
2005-2010	PI	Safety Engineering and Ergonomics Training Program	NIOSH	250,000
2005-2006	PI	Advanced Biomechanical and Cardiopulmonary Assessment Suit (ABACAS) Development Program	NIOSH	100,000
2003-2005	PI	Improvements in Plant Facilities Through Development of Work-Posture Prediction Models	Mail-Well Corporation, CO	100,000
1999-2000	PI	Ergonomic Hazard Abatement Project	United States Navy	267,000
1998-2002	Co-PI	Human Factors Engineering and Safety Research Support Contract	United States Coast Guard Research and Development Center, Groton, CT	1,200,000
1996-1997	PI	Lumber Grader Ergonomic Intervention Study	Weyerhaeuser Corporation	75,000
1995-1996	PI	Autostereovision Display Research	National Science Foundation SBIR Research Grant	40,000
1995-1995	PI	Telerobotic Performance Analysis System Test Battery	NASA	30,000

PERIOD	ROLE	TITLE	AGENCY	FUNDING
1994-1999	Co-PI	Coast Guard Human Factors & Ergonomics Research Multi- Task Order Contract	United States Coast Guard Research and Development Center, Groton, CT	$5,000,000
1994-1997	PI	Tactile Display Design for Computer Users Who Are Blind	National Institutes for Disability & Rehabilitation Research, Washing ton, DC	$76,000
1994-1995	PI	Orthotic Lumbar Garment Analysis	USA Support, Inc.	$22,845
1989-1992	CI	Risk of Low-Back Injury in Municipal Employees	Centers for Disease Control	$33,000
1993	CI	Educational Resource Center Grant	National Institutes for Disability & Rehabilitation Research, Washing ton, DC	$3,500,000
1993	Co-PI	Human-Orientated Technologies & Telerobotic	NASA	$412,000
1993	Co-PI	Human-Orientated Technologies & Telerobotic Performance, Wisconsin Center for Space Automation & Robotics	NASA	$412,000
1993	PI	Vibrotactile Display Development for Master- Controllers	Orbitec Inc.	$35,000
1993	Co-PI	Human-Orientated Technologies & Telerobotic Performance, Wisconsin Center for Space Automation & Robotics	NASA	$612,300
1992	PI	Job Energy Management Model	Association of American Railroads	$40,000
1992	Co-PI	Human-Orientated Technologies & Telerobotic Performance, Wisconsin Center for Space Automation & Robotics	NASA	$505,000
1991	Co-PI	Human-Orientated Technologies & Telerobotic Performance, Wisconsin Center for Space Automation & Robotics	NASA	$525,800
1991	Co-PI	Undergraduate Human Factors Teaching Laboratory Grant	State of Wisconsin	$258,000
1989	PI	Posture Prediction Model for Use in Computer-Aided Design Systems Incorporating Ergonomic Design	WARF Grant	$28,500

PERIOD	ROLE	TITLE	AGENCY	FUNDING
1989	PI	Development of Ergonomic Design Guide	Association of American Railroads	$152,000
1976-1981	PI	Human Factors and Ergonomics Research Projects	U.S. Coast Guard and U.S. Navy	$10,000,000
			Total Funding	$24,459,618

PROFESSIONAL SERVICE ACTIVITIES

EDITORIAL BOARDS

1. International Journal of Industrial Ergonomics 1993-2000
2. Journal of Virtual Reality 2005-Present

REVIEWER

1. IEEE Journal of Engineering in Medicine and Biology
2. International Journal of Human-Computer Interaction
3. International Journal of Industrial Ergonomics
4. Journal of Ergonomics
5. Journal of the Human Factors and Ergonomics Society
6. Journal of Applied Ergonomics
7. Journal of Accident Analysis and Prevention
8. Journal of Learning and Individual Differences

OFFICES HELD IN PROFESSIONAL SOCIETIES

1. Technical Program Chair 2007, Aging, Human Factors and Ergonomics Society
2. General International Chair, Society of Automotive Engineering's 27 th International Conference on Environmental Systems, 1996-1997.
3. Vice-Chair, Society of Automotive Engineering's 26 th International Conference on Environmental Systems, 1995-1996.
4. Technical Chair, American Institutes of Aeronautics and Astronautics Society of Automotive Engineering's 25 th International Conference on Environmental Systems 1994-1995
5. Representative, Human Factors Society's Council of Technical Groups (Professional Educators) 1991-1993
6. Editor, Human Factors Society's Professional Educators' Newsletter 1991-1993
7. Chair, Awards Committee for International Industrial Ergonomics & Safety Foundation 1992-1993

INTERNATIONAL AND NATIONAL COMMITTEE MEMBERSHIP:

1. Committee E-34.0 Occupational Health and Safety, American Standards and Testing of Materials (ASTM)
2. Safety Requirements for Products, Equipment and Facilities, American Standards and Testing of Materials (ASTM) Subcommittee E-34.80
3. Life Sciences Technical Committee, American Institute of Aeronautics & Astronautics,
4. Human Factors Engineering Working Group, American Institute of Aeronautics & Astronautics
5. U.S. Coast Guard's Committee on Maritime Medicine

CHAIR, SYMPOSIA (1993 AND BEYOND)

1. Exploring Age Differences in Kinematics, Perception and Cognition. Annual Meeting of Human Factors and Ergonomics Society, Orlando, FL Sept. 30, 2005.

2. Preventing Musculoskeletal Injuries in Construction Industry, Northwest Construction Safety Conference, Seattle, WA, September 12-13, 1994.

3. Psychomotor Performance, Rehabilitation Ergonomics Conference, 12th Triennial Congress of the International Ergonomics Association, Toronto, Canada, August 15-19, 1994.

4. Telesciences & Telerobotics, Joint SAE & AIAA International Conferences on Environmental Life Support Systems, Friedrichshaften, Germany, June 21-25, 1994.

5. Crew Interface & Human Factors in Robotics Operations, AIAA Space Programs and Technologies Conference, Marshall Space Flight Center, Huntsville, AL, Sept 21-23, 1993.

6. Three-Dimensional Vision, Fifth International Conference on Human-Computer Interaction, Orlando, FL August 8-13th, 1993.

PUBLIC LECTURES

1. 2002 Costa Rica's Ecology and Technological Advancement, Red Hill High School, Chesapeake, Ohio

2. 1997 - Invited Speaker, "Seating Biomechanics." Oregon Governor's Occupational Safety & Health Conference, Portland, Oregon, March 3-5.

3. 1996 - Invited Speaker, "Future Office Design." Oregon OSHA Office Ergonomics Boot Camp.

4. 1994- Getting a grip on work. Puget Sound Chapter of Human Factors and Ergonomics Society.

5. 1992 - Minicourse on Telerobotics, Cherokee School, Public School System, Madison, WI

6. 1991- Invited Speaker, Annual Engineers Day, University of Wisconsin College of Engineering

7. 1991- Invited Speaker, Fall Day On Campus, University of Wisconsin Alumni Association

8. 1992-Participant & Speaker, Expanding Your Horizons in Science, Engineering and Mathematics, Society of Women Engineers

9. 1991-Participant & Speaker, Expanding Your Horizons in Science, Engineering and Mathematics, Society of Women Engineers

10. 1990-Participant & Speaker, Expanding Your Horizons in Science, Engineering and Mathematics, Society of Women Engineers

11. 1989-Participant & Speaker, Expanding Your Horizons in Science, Engineering and Mathematics, Society of Women Engineers

12. 1989-Key Speaker, Annual Bascom Hill Society Event, University of Wisconsin

ADVISING AND SUPPORTING OF SECONDARY SCHOOL EDUCATIONAL ACTIVITIES

1. 2008-Judge, JETS State High School Math and Physics Competition, West Virginia
2. 2007-Judge, JETS State High School Math and Physics Competition, West Virginia
3. 1989-Judge, National Science Teacher's Association, Destination Mars- High School NASA Science Competition
4. 1988-Advisor, Westinghouse Science Project Competition, Memorial High School

PRO BONO CONSULTATIONS (SINCE 1994)

1. 2005, West Virginia State Journal, Ergonomics Series
2. 1994, MEDEX Program, University of Washington: Evaluation and modification of office work station.
3. 1994, Office of Personnel, University of Washington: Consultation on proposed keyboard and mouse designs.
4. 1994, Newspaper Pressmen, Seattle, Washington: Consultation on design of press roller and cleaning operations, and assessment of request for hoist equipment.
5. 1994, Hanford Environmental Health Foundation, Hanford, Washington: Ergonomics and Safety Program Review

OTHER COMMUNITY ACTIVITIES

1. President, Mont Chateau Estates Homeowner’s Association 2009-2010
2. Board Member, Mont Chateau Estates Homeowner’s Association 2007-2009
3. President, Swim Team Booster Club, Sammamish High School, Bellevue, Washington (1994-1997)

PROFESSIONAL LICENSURE AND MEMBERSHIPS

PROFESSIONAL LICENSURE

1. Certified Professional Ergonomist, License No. 97

PROFESSIONAL MEMBERSHIP

1. Aerospace Medical Association
2. American Institute of Aeronautics & Astronautics
3. American Society for Engineering Education
4. American Society of Biomechanics
5. American Society of Safety Engineers 6. Human Factors and Ergonomics Society
6. Illuminating Engineering Society of North America
7. Institute of Industrial Engineers, Senior Member
8. International Society of Biomechanics
9. International Industrial Ergonomics & Safety Foundation
10. New York Academy of Sciences
11. American College of Occupational Medicine
12. Reserve Officers Association

CORPORATE BOARD MEMBER

1. Sevrain Tech, Inc. 1987-1990
2. Unified Technologies, Inc. 1990-1993

CONSULTING EXPERIENCE

1. Anheuser-Busch Corporation
2. Association of American Railroads
3. Augusta Systems, Inc.
4. Battelle Laboratories
5. Boeing Company
6. United Carpenters Union
7. Burlington Northern and Santa Fe Railroad
8. Carpenter's Union
9. California Lodging and Hotel Association
10. California Safety Associates, Inc.
11. Conrail Railroad 10. CSX Railroad
12. Educorp Software
13. Essex Corporation
14. ExecuTech Inc.
15. Firestone Tire and Rubber Company
16. Ford Motor Company
17. Foss Tugboats
18. General Motors Corporation
19. Jet Propulsion Laboratory, California Institute of Technology
20. Hyatt Hotels
21. Injury Prevention Center, The Johns Hopkins University
22. Kansas City Southern Railroad
23. Mikelson Yachts
24. National Institutes of Safety and Health (NIOSH)
25. Nintendo Corporation
26. Norfolk Southern Railroad
27. Orbitec Inc.
28. OSHA, Federal

29. OSHA, Oregon
30. Owens/Corning Fiberglas
31. Pacific-Sierra Research Corporation
32. Phelps Dodge Magnet, Inc.
33. Santa Fe Railroad
34. Sevrain Tech, Inc.
35. Sony Corporation
36. Southern Pacific Railroad
37. Union Pacific Railroad
38. United Parcel Service
39. United States Coast Guard
40. United States Navy NAVSEA
41. United States Navy NAVAIR
42. United States Navy Seals
43. United States Nuclear Defense Agency
44. Washington Post
45. Washington State, SHARP
46. Weyerhaeuser Corporation

PEER REVIEWED PUBLICATIONS

1. Wiker, S. F., Schwerha, D. J. and Jaraiedi, M. (2009) Auditory and visual distractor decrement in older worker manual assembly task learning: Impact of spatial reasoning, field independence and level of education. **Intl J of Human Factors & Ergonomics in Manufacturing**. 19(4): 300-317.

2. Schwerha, D. J., Wiker, S.F. and Jaraiedi, M. (2007) Effect of distracters, age and level of education upon psychomotor task learning. **Intl J Industrial Ergonomics**, 37: 801-809.

3. Wiker, S. F. and Baggio, V. (2007) Pre-Exertion perceptions of musculoskeletal overexertion injury risk: An assessment of age, gender, anthropometric, and lifting task factors. **Proceedings Human Factors & Ergonomics Society**, Baltimore, MD pp. 50- 53.

4. Wiker, S. F., Sinsel, E, McFerron, J. Jackson, M., Westfall, B. Maduri, A. (2007) Use of back-propagation genetic algorithms for parsing and classification of continuous wholebody kinematic posture time histories into analytically useful subtasks. **Proceedings of 11th International Conference on Human Aspects of Advanced Manufacturing Agility and Hybrid Automation**, Poznan, Poland, 9th-12th July, 2007.

5. Wiker, S. F., E. Sinsel and J. McFerron (2007) Prediction of hand forces and moments using neural net modeling of ground reaction forces and kinematic data. **J Biomechanics**, 40, Supplement 2, S28

6. Wiker, S. F., Sinsel, E. and McFerron, J. (2007) Prediction of hand forces and moments using neural net modeling of ground reaction forces and kinematic data. **Proceedings of International Society of Biomechanics**. Taipei, Taiwan.

7. Wiker, S. F., Maduri, A, Jackson, M., Westfall, B. McFerron, J and Sinsel, E.(2007) Interaction of industrial task kinematics and optical retro-reflective marker cluster spacing: An analysis of marker detection accuracy and cost of data reduction. **Proceedings of the International Society of Optical Engineering**, Boston, MA. Abstract

8. Wiker, S. F., Jackson, M., Westfall, B. Maduri, A, McFerron, J and Sinsel, E. (2007) Development and validation of a testbed for rapid prototyping and evaluation of Automated Biomechanical and Cardiopulmonary Sensor Suite (ABACAS) Systems. **Proceedings of the International Society of Optical Engineering**, Boston, MA. Abstract

9. McDowell, T. W., Wiker, S. F., Dong, R. G. and Welcome, D. E. (2007) Effects of vibration on grip and push force-recall performance. **Intl J Industrial Ergonomics**, 37(3): 257-266.

10. McDowell, T. W., Wiker, S. F., Dong, R. G., Welcome, D. E. and Schopper, A. W. (2006) Evaluation of psychometric estimates of vibratory hand-tool grip and push forces. **Proceedings of the First American Conference on Human Vibration**. Morgantown, WV, 10-12 June.

11. Wiker, S. F., Schwerha, D. J. and Jaraiedi, M. (2006) Impact of auditory and visual distractors upon manual assembly task: learning among older workers with different levels of spatial reasoning and field dependence. **Proceedings of the 50th Annual Human Factors and Ergonomics Society Conference**. San Francisco, California, October 16-20, pp 200-204.

12. Schwerha, D. J., Wiker, S. F. and Jaraiedi, M. (2006) Impact of age and distractors upon learning a manual assembly task. **Proceedings of the International Ergonomics Association**. 10-15 July, Maastricht, Netherlands.

13. McDowell, T. W., Wiker, S. F., Dong, R. G., Welcome, D. E. and Schopper, A. W. (2006) Evaluation of psychometric estimates of vibratory hand-tool grip and push forces. **Intl J Industrial Ergonomics** 36(2):119-128.

14. Wiker, S. F. (2005) Ergonomic risks, interventions and economic gains. **Proceedings of the Eighth Conference and Exhibition on Occupational Safety and Health**. 28-29 June, Kuala Lumpur, Malaysia.

15. Wiker, S. F. (2005) Impact of design features upon perceived tool usability and safety. **Proceedings of International Society for Optical Engineering: Intelligent Systems in Design and Manufacturing** VI 5999(OE05-SA108-29):R1-R14.

16. Wiker, S. F. (2005) Challenges facing developers of CAD/CAM models that seek to predict human working postures. **Proceedings of International Society for Optical Engineering: Intelligent Systems in Design and Manufacturing** VI 5999(OE05- SA108-28):Q1-Q7.

17. Wiker, S. F. (2003) Statistical challenges facing development of epidemiologically- validated low-back injury risk predictive and descriptive models using biomechanical, anthropometric or consensus-based ergonomic risk prevention guidelines. **Seminars in Spine Surgery** 15(1): 3-15.

18. Myers, A., Baker, S. P., Li, G., Smith, G., Wiker, S.F., Liang, K. and Johnson, J. (1999) Back injury in municipal workers: A case-control study. **Am J Public Health** 89(7): 1036- 1041.

19. Spielholz, P., Wiker, S. F. and Silverstein, B. (1998) An ergonomic characterization of work in concrete form construction. **Journal American Industrial Hygiene Assoc** 59(9): 629-635.

20. Spielholz, P. and Wiker S.F. (1996), Communicating ergonomic hazards in the face of outrage. **Advances in Industrial Ergonomics and Safety** (8): 758-762.

21. Wiker, S. F., Stewart, K., Meyers, T. and Spielholz, P. (1996) Printed Circuit Board Visual Inspection Performance: A Comparative Analysis of Mono- and Stereovision Macroscopic Views. **Society of Photo-Optical Instrumentation Engineers**. Paper No. 3012-07.

22. Wiker, S. F., Baker, D. R., Arndt, S. R. and Zhou, W. (1996) Impact of Varying Levels of Autostereovision Upon Telemanipulation. **Proceedings of the Human Factors and Ergonomics Society** 40 th Annual Meeting, Philadelphia, PA, Taylor and Francis, pp. 688-692.

23. Spielholz P and Wiker SF, (1996) Reports of Regional Body Discomfort During Carpenter Apprentice Training. **Proceedings of the Human Factors and Ergonomics Society** 40 th Annual Meeting, Philadelphia, PA, Taylor and Francis, pp. 688-692.

24. Spielholz, P. and Wiker, S.F. (1995), Assessing Ergonomic Hazards in Unstructured Work Using Work Sampling Techniques: An Application in the Construction of Concrete Formwork, **Advances in Industrial Ergonomics and Safety** (7): 75-80.

25. Zhou, W., Duffie, N. and Wiker, S. F. (1994) Control of grasping force in teleoperation using model reference adaptive approach. **American Institutes of Aeronautics & Astronautics**. 94(1440):1-7.

26. Zhou, W., Duffie, N., & Wiker, S. (1994). Control of grasping force in teleoperation using model reference adaptive approach (No. 941440). **SAE Technical Paper**.

27. Wiker, S.F. and Chen, A. (1994) Accuracy and efficacy of using pictograms for self- report of postures assumed when performing lifting tasks. **Advances in Industrial Ergonomics and Safety** 4: 641-644.

28. Mital, A., Deivanayagam, S., Malzahn, D., Wiker, S., Vanderheiden, G. C. and Freivalds, A. (1994): Educating People with Disabilities. **Proceedings of the Human Factors and Ergonomics Society** 38th Annual Meeting p. 417.

29. Wiker, S. F. and Fuerlinger, S. (1994) Impact of cyclic pinch-grasp force, duration and frequency upon perceived grasp force and localized discomfort in the hand and arm. **Advances in Industrial Ergonomics and Safety**. 4: 569-572.

30. Wiker, S. F. (1993) Human factors in space automation and robotics. **Aerospace America** 31(10): 30-35.

31. Wiker, S. F., Page, G. and McMahan, P.B. (1993) Ergonomic seating design. In Hansen, D. (Ed) **The Work Environment**. New York: Lewis Press, Inc, Vol. 3: 173-192.

32. Wiker, S. F. (1993) Telerobotic performance analysis system: An analysis of reach, move, and position elements. **American Institutes of Aeronautics & Astronautics.** 93(4112)

33. Zhou, W., Duffie, N. and Wiker, S. F. (1993) Identification of human grasp dynamics in teleoperation. **American Institutes of Aeronautics & Astronautics.** 93(4112):1-10.

34. Wiker, S. F. (1993) Telemanipulation: Master-controller design issues. **Advances in Human Factors & Ergonomics** 19(A): 173-178.

35. Wiker, S. F. (1993). Telemanipulation: Master-Controller Design Issues. **Human Computer Interface** (1) 173-178.

36. Lee, S., Wiker, S. F. and G.C. Vanderheiden (1993) Interactive haptic interface: Two- dimensional form perception for blind access to computers. **Advances in Human Factors & Ergonomics** 19(B): 190-195.

37. Wiker, S. F. (1993) Teaching ergonomic theory and practice using computer models. In Knadler, Jr., C. and Vakilzadian, H. (Eds.) **International Conference on Simulation in Engineering**. 25(3): 71-75.

38. Wiker, S. F. (1993). Teaching Ergonomic Theory and Practice Using Computer Models. **Simulation Series**, 25, 71-71.

39. Lee, S, Wiker, SF and Vanderheiden, G.(1993) Interactive haptic interface: two- dimensional form perception for blind access to computers. **Proceedings of the Fifth International Conference on Human-Computer Interaction**, Vol 2., pp 190-5.

40. Wiker, S. F. and Duffie, N.A. (1992) Grasp force control in telemanipulation. **American Institutes of Aeronautics & Astronautics** 92(1453): 1-12.

41. Wiker, S. F. and Stultz, M. (1992) NIOSH Work Practices Guide for Manual Lifting: Posturally-based differences in perceived stress in lifting tasks of equivalent design merit. In Kumar, S. (Ed.) **Advances in Industrial Ergonomics & Safety**. Washington, DC: Taylor & Francis, p. 607-614.

42. Wiker, S. F., Jones, T., Baker, S., Myers, A., Smith, G. and Edwards, C. (1992) Measurement of indices of ergonomic stress in an epidemiological study of low-back injuries in municipal workers. In Kumar, S. (Ed.) **Advances in Industrial Ergonomics & Safety**. Washington, DC: Taylor & Francis, p. 913-920.

43. Baker, S. P., Jones, T. M., Myers, A. H., Wiker, S. F., Smith, G., Corn, M., Sznajder, J. (1992) Prevention of low-back injuries in municipal workers. In Kumar, S. (Ed.) **Advances in Industrial Ergonomics & Safety**. Washington, DC: Taylor & Francis, p. 921-924.

44. Wiker, S. F. and Lee, S. (1992) Control and gauging grasp force in telemanipulators: A comparison of direct force and electrocutaneous display systems. In Kumar, S. (Ed.) **Advances in Industrial Ergonomics & Safety**. Washington, DC: Taylor & Francis, p. 1243-1251.

45. Wiker, S. F. (1992) Posturally-mediated perceptions of strain encountered when lifting: A preliminary analysis of the basis and value in predicting worker posture. **Computer Applications in Ergonomics, Occupational Safety and Health.** Amsterdam: North- Holland, p. 497-509.

46. Wiker, SF. (1992) Posturally-mediated perceptions of strain encountered when lifting. A preliminary analysis of the basis and value in predicting worker posture. **Proceedings of the International Conference on Computer Aided Ergonomics and Safety, Computer Applications in Ergonomics**, pp. 497.

47. Wiker, S. F. (1991) Fatigue, discomfort, and changes in the psychometric function found with repetitive pinch grasps. Designing for Everyone: **Proceedings of the 11 th Congress of the International Ergonomics Association**, Paris. New York: Taylor & Francis, p. 368-370.

48. Wiker, S. F. (1991) Review of Haslegrave, Wilson, Corlett and Manenica (Eds) Work Design in Practice. **IEEE J Engineering in Medicine and Biology**, Dec. p. 68.

49. Wiker, S. F., Vanderheiden, G., Lee, S. and Arndt, S. (1991) Development of tactile mice for blind access to computers: Importance of stimulation locus, object size, and vibrotactile display resolution. **Proceedings of the Human Factors Society 35 th Annual Meeting**, p. 708-712.

50. Wiker, S. F. and Duffie, N. A. (1990) Telerobotic Performance Analysis System (TPAS). **Proceedings of the Annual Space Operations Automation and Robotics Conference**, Albuquerque, NM, June 26-28 th.

51. Wiker, S. F. ,Duffie, N. A. , Yen, T., Gayle, K. (1990) Comparison of Force and Tactile Feedback for Telemanipulation Grasp Force Control. **Proceedings of the Annual Space Operations Automation and Robotics Conference**, Albuquerque, NM, June 26- 28 th.

52. Duffie, N.A. , Wiker, S. F., Zik, J. and Gayle, K. (1990) Impact of Inertia, Friction and Backlash Upon Control of Grasp Force in Telemanipulation **Proceedings of the Annual Space Operations Automation and Robotics Conference**, Albuquerque, NM, June 26-28 th.

53. Wiker, S. F., Chaffin, D. B., and Langolf, G.D. (1990) Shoulder postural fatigue and discomfort: No relationship with isometric strength capability in a light-weight manual assembly task. I**ntl J Industrial Ergonomics**. 5: 133-146.

54. Wiker, S. F. (1990) Review of Ivergard, T. (1989) Handbook of Control Room Design and Ergonomics. **IEEE J Engineering in Medicine and Biology** Dec.

55. Wiker, S. F., Langolf, G. D., and Chaffin, D. B. (1989) Arm posture and human movement capability. **Human Factors** 31(4): 421-442.

56. Wiker, S. F., Chaffin, D. B., and Langolf, G. D. (1989) Shoulder posture and localized muscle fatigue and discomfort. **Ergonomics** 32(20):211-237.

57. Wiker, S. F. and Chaffin, D.B. (1989) Electromyography: An insensitive technique for characterization of postural fatigue in the shoulder complex. in Mital, A. (Ed.) **Advances in Industrial Ergonomics and Safety I**. London: Taylor & Francis.

58. Duffie, N.A., Wiker, S. F. and Zik, J. J. (1989) Test bed experiments for various telerobotic system characteristics and configurations. **Proceedings of the Annual Space Operations Automation and Robotics Conference**, Houston, TX, July 25-27 th.

59. Wiker, S. F., Hershkowtiz, E., and Zik, J. (1989) Teleoperator comfort and psychometric stability: Criteria for limiting master-controller forces of operation and feedback during telemanipulation. **Proceedings of the National Aeronautics & Space Administration's Conference on Space Telerobotics**, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA.

60. Wiker, S. F. (1988) Tactile sensing techniques for robots. In E. Heer and H. Lum (Eds.) **Machine Intelligence and Autonomy for Aerospace Systems**. Washington, DC: American Institute of Aeronautics & Astronautics Press.

61. Moore, D. K., Spain, H., Uttal, W. R., Wiker, S. F. and Yamamoto, S. (1987) Advanced telerobotic systems under development in Japan. **Scientific Bulletin** 12(3): 61-70.

62. Pepper, R.L., Kennedy, R.S., Bittner, Jr., A.C., Wiker, S.F., and Harbeson, M.M. (1985) Performance evaluation tests for environmental research (PETER): Code substitution test. **Perceptual Motor Skills**, 61: 735-745.

63. Langolf, G. D., Chaffin, D. B., Wiker, S. F., Anderson, C. K., and Evans, S. M. (1984) Ergonomic problems and improvements in automobile assembly operations. **SAE Technical Paper** No. 840038.

64. Wiker, S. F. and Miller, J. M. (1983) Acceleration exposures in forward seating areas of bowrider recreational boats. **Human Factors** 25(3): 319-327.

65. Wiker, S. F., Kennedy, R. S. and Pepper, R. L. (1983) Performance evaluation tests for environmental research (PETER): Navigation plotting task. **Aviat Space Environ Med** 54(2): 144-149.

66. Wiker, S. F., Pepper, R. L. and McCauley, M. E. (1981) A vessel class comparison of physiological, affective state, and psychomotor performance changes in men at sea. **Proceedings of the International Workshop on Research Methods in Human Motion and Vibration Studies**, New Orleans, LA, Sep .

67. Pepper, R. L., Kennedy, R. S., Bittner Jr., A. C. and Wiker, S. F. (1980) Performance evaluation tests for environmental research (PETER): Code substitution test. **Proceedings of the 7 th Psychology in the Department of Defense Symposium**, U. S. Air Force Academy.

68. Wiker, S. F. and Pepper, R. L. (1979) Habituation of crew performance, stress and mood aboard a SWATH and monohull vessel. **Oceans**. 11(9): 153-158.

69. Wiker, S. F. Kennedy, R. S. , McCauley, M. E., and Pepper, R. L. (1979) Susceptibility to seasickness: Influence of hull design and steaming direction. **Aviat Space Environ Med** 50(10): 1046-51.

70. Pepper, R. L. and Wiker, S. F. (1979) Repeated assessment of stress, mood, and performance changes resulting from exposure to vessel motions at sea. **Proceedings of the 23 rd Annual Meeting of the Human Factors Society**, Boston, MA.

71. Wiker, S. F., Kennedy, R. S., McCauley, M. E. and Pepper, R. L. (1979) Reliability, validity, and application of an improved scale for assessment of motion sickness severity. **Proceedings of the Annual Meeting of the Aerospace Medical Society**, Washington, DC.

72. Wiker, S. F. (1977) Perspectives in collision stressor research. **Boating Safety** Fall: 1-6.

BOOKS

73. Wiker, S. F.(2012) Promoting Safety Through Effective Application of Human Factors Engineering, in Haight, J. (Ed.) **Safety Professional's Handbook**. Second Ed. Des Plaines: American Society of Safety Engineers.

74. Wiker, S. F. (2012) Ergonomic design and overexertion injury risk. In Li, G. and Baker, S. (Eds.) **Injury Research: Theories, Methods and Approaches**. New York: Springer.

75. Wiker, S.F. (2009) Accommodation through improved design. Kumar, S (Ed.) **Ergonomics for Rehabilitation Professionals**. New York: CRC Press.

76. Wiker, S. F.(2008) Importance of Human Factors Engineering in Promotion of Safety, in Haight, J. (Ed.) **Safety Professional's Handbook**. Des Plaines: American Society of Safety Engineers.

77. Wiker, S. F. (1988) Tactile sensing techniques for robots. In E. Heer and H. Lum (Eds.) **Machine Intelligence and Autonomy for Aerospace Systems**. Washington, DC: American Institute of Aeronautics & Astronautics Press.

DISSERTATIONS AND THESES

78. Wiker, S. F. (1986) Effects of relative hand location upon movement capability and fatigue. Dissertation, University of Michigan, Ann Arbor. Chaired by: D. B. Chaffin & G. D. Langolf.

79. Wiker, S. F. (1981) Motion sickness and associated physiological response to ship motion. Masters Thesis, George Washington University Washington, DC. Chaired by: R. K. Packer.

TECHNICAL REPORTS

80. Wiker, S. F. (2011) Evaluation of Hotel Housekeeper Physical Workload and Overexertion Injury Risk Reduction Proffered by Use of Fitted Bottom Sheets for Hotel Bed Making. Report No. 1-2011 Ergonomic Design Institute, Seattle, WA.

81. Wiker, S. F. (2007) A Human Factors Analysis Assessment of Human-SWARM Robot Interface Design. Technical Report No. 1-2007, Morgantown: West Virginia University Ergonomics Laboratory.

82. Wiker, S. F. (2007) A Human Factors Analysis Assessment of Human-SWARM Robot Interface Design. Technical Report No. 1-2007, Morgantown: West Virginia University Ergonomics Laboratory.

83. Wiker, S. F., Salazar, N. and Baggio, V. (2004) Ergonomic Assessment of Printing Facility Jobs. Technical Report No. WVU-EL 1-2004., Ergonomics Laboratory, West Virginia University.

84. Wiker, S. F., Stewart, K., Meyers, T. and Spielholz, P. (1996) Printed Circuit Board Visual Inspection Performance: A Comparative Analysis of Mono- and Stereovision Macroscopic Views. Technical Report No. 7-29-96, Ergonomics Laboratory University of Washington, Seattle, WA.

85. Wiker, S. F. and Stewart, K. J. (1996) Comparative Ergonomic Measurement and Evaluation of United Parcel Service Facilities. Technical Report No. 7-5-96, Ergonomic Design Institute, Bellevue, WA.

86. Wiker, S. F., Stewart, K.J., Meyers, T. and Miner, P. (1996) Comparative Analysis of Crew Fatigue Response Aboard 44' and 47' Coast Guard Motor Life Boats. Technical Report No. 4-30-96,Ergonomics Laboratory, University of Washington, Seattle, WA.

87. Wiker, S. F., Baker, D. R., Arndt, S. R. and Zhou, W. (1996) Impact of Varying Levels of Autostereovision Upon Telemanipulation. Ergonomics Laboratory Technical Report, University of Washington, No. 2-1.

88. Bramwell, A.T., Bittner, Jr., A.C., Kinghorn, R. A. and Wiker, S. F. (1993) 82' WPB replacement human factors engineering recommendations. U. S. Coast Guard Technical Report.

89. Bittner, Jr., A.C, Wiker, S. F., Kinghorn, R. A. and Bramwell, A. T. (1993) 82' WPB replacement human factors engineering recommendations: Integrated literature review and baseline design evaluation. U. S. Coast Guard Technical Report.

90. Bittner, A. C., Jr., Wiker, S. F., Kinghorn, R. A. and Bramwell, A. T. (1993) Crew-based recommendations for improved Coast Guard patrol boat design. U. S. Coast Guard Technical Report.

91. Wiker, S. F., & Pepper, R. L. (1981). Adaptation of Crew Performance, Stress and Mood Aboard a SWATH and MONOHULL Vessel (No. USCG-D-18-81). COAST GUARD WASHINGTON DC OFFICE OF RESEARCH AND DEVELOPMENT.

92. Wiker, S. F. (1988) Tactile-sensing capabilities for telerobotics. Naval Ocean Systems Center, Technical Report No. 1249.

93. Wiker, S. F. (1988) Tactile-sensing techniques applicable for telerobots. Naval Ocean Systems Center Technical Report ADA208313.

94. Wiker, S. F. (1988). Teletouch Display Development. Phase 1 (No. NOSC/TR-1230). NAVAL OCEAN SYSTEMS CENTER SAN DIEGO CA.

95. Hightower, J. D., Smith, D. C., & Wiker, S. F. (1986). Development of remote presence technology for teleoperator systems. NAVAL OCEAN SYSTEMS CENTER San Diego, CA.

96. McClellan, G. E., & Wiker, S. F. (1985). A comparison of symptomatology and performance degradation for motion and radiation sickness (No. PSR). PACIFIC-SIERRA RESEARCH CORP ARLINGTON VA WASHINGTON OPERATIONS.

97. Wiker, S. F. and Chaffin, D. B. (1984) An ergonomic analysis of selected jobs at an Owens/Corning Fiberglas plant. Technical Report submitted to Owens/Corning Fiberglas, Toledo, OH.

98. Chaffin, D. B., Wiker, S. F., and Anderson, C. K. (1984) A User's Guide to the Human Static Strength Prediction Program: Microcomputer Version. Center for Ergonomics Technical Report, March.

99. McCauley, M.E., Hennessy, R.T., and Wiker, S.F., (1984) United States Coast Guard Search and Rescue Crew/Small Boat Systems Performance Measurement Analysis Technical Report MTI-8403. Carmel, CA: Monterey Technologies, Inc., August.

100. Wiker, S. F. (1983) Relationships between empirical and estimated human performance decrements during motion and radiation sickness. Technical Report submitted to Pacific- Sierra Research Corporation, Arlington, VA, Sep.

101. Bittner, A. C., Jr., Wiker, S. F., Kinghorn, R. A. and Bramwell, A. T. (1993) 82' WPB replacement human factors engineering recommendations: Executive Summary. U. S. Coast Guard Technical Report.

102. Bittner, A. C., Jr., Wiker, S. F., Kinghorn, R. A. and Bramwell, A. T. (1993) 82' WPB replacement human factors engineering recommendations: Integrated literature review and baseline design evaluation. U. S. Coast Guard Technical Report.

103. Miller, J. M. and Wiker, S. F. (1981) Truck driver fatigue: A review of the literature. J.M. Miller Engineering Technical Report, June.

104. Kennedy, R. S., Bittner Jr., A. C., Carter, R. C., Krause, M., Harbeson, M. M., McCafferty, D. B., Pepper, R. L., and Wiker, S. F. (1981) Performance evaluation tests for environment research (PETER): A collection of papers. Naval Biodynamics Laboratory Technical Report No. 80-R-008, July.

105. Wiker, S. F. and Pepper, R. L. (1981) Adaptation of crew performance, stress and mood aboard a SWATH and monohull vessel. U. S. Coast Guard Technical Report No. CG-D- 18-81.

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108. Wiker, S. F. and Pepper, R. L. (1978) Change in crew performance, physiology, and affective state due to motions aboard a small monohull vessel: A preliminary study. U. S. Coast Guard Technical Report No. CG-D-85-78.

CONFERENCE PRESENTATIONS (FROM 1978)

1. Wiker, S. F. and Baggio, V. (2007) Pre-Exertion perceptions of musculoskeletal overexertion injury risk: An assessment of age, gender, anthropometric, and lifting task factors. 50th Annual Conference of the Human Factors and Ergonomics Society, Baltimore, MD 2-5th October.

2. Wiker, S. F., Sinsel, E. and McFerron, J. (2007) Classification of kinematic time histories of discrete manual assembly reach and move therbligs using multiple discriminant analysis of trajectory path and linear velocity and acceleration behaviors. Eleventh International Conference on Human Aspects of Advanced Manufacturing Agility and Hybrid Automation, Poznan, Poland, 9th-12th July.

3. Wiker, S. F., Sinsel, E, McFerron, J. Jackson, M., Westfall, B. Maduri, A. (2007) Use of back-propagation genetic algorithms for parsing and classification of continuous wholebody kinematic posture time histories into analytically useful subtasks. Eleventh International Conference on Human Aspects of Advanced Manufacturing Agility and Hybrid Automation, Poznan, Poland, 9th-12th July.

4. Wiker, S. F., Sinsel, E. and McFerron, J. (2007) Prediction of hand forces and moments using neural net modeling of ground reaction forces and kinematic data. Annual Meeting of International Society of Biomechanics. Taipei, Taiwan, July 1-5.

5. Wiker, S. F., Maduri, A, Jackson, M., Westfall, B. McFerron, J and Sinsel, E. (2007) Interaction of industrial task kinematics and optical retro-reflective marker cluster spacing: An analysis of marker detection accuracy and cost of data reduction. Annual Meeting of International Society of Optical Engineering—Optics East, Boston, MA, Sept 9-11.

6. Wiker, S. F., Jackson, M., Westfall, B. Maduri, A, McFerron, J and Sinsel, E. (2007) Development and validation of a testbed for rapid prototyping and evaluation of Automated Biomechanical and Cardiopulmonary Sensor Suite (ABACAS) Systems. Annual Meeting of International Society of Optical Engineering—Optics East, Boston, MA Sept 9-11.

7. Wiker, S. F., Schwerha, D. J. and Jaraiedi, M. (2006) Impact of auditory and visual distractors upon manual assembly task: learning among older workers with different levels of spatial reasoning and field dependence. The 50th Annual Meeting of the Human Factors and Ergonomics Society. San Francisco, California, October 16-20, 2006.

8. Schwerha, D. J., Wiker, S. F. and Jaraiedi, M. (2006) Impact of age and distractors upon learning a manual assembly task. International Ergonomics Association Conference. 10- 15 July 2006, Maastricht, Netherlands.

9. McDowell, T. W., Wiker, S. F., Dong, R. G., Welcome, D. E. and Schopper, A. W. (2006) Evaluation of psychometric estimates of vibratory hand-tool grip and push forces. Proceedings of the First American Conference on Human Vibration. Morgantown, WV, 10-12 June.

10. McDowell, T. W., Wiker, S. F., Dong, R. G., & Welcome, D. E. (2006). The effects of vibration on psychophysical grip and push force-recall accuracy. In FIRST AMERICAN CONFERENCE ON HUMAN VIBRATION.[vp]. 2006..

11. Wiker, S. F. (2005) Ergonomic risks, interventions and economic gains. Eighth Conference and Exhibition on Occupational Safety and Health, Putra World Trade Center, Kuala Lumpur, Malaysia, 28-29 June.

12. Wiker, S. F. (2005) Impact of design features upon perceived tool usability and safety. Intelligent Systems in Design and Manufacturing VI, International Society for Optical Engineering, Boston, MA, October 23-26.

13. Wiker, S. F., & Seol, M. S. (2005, November). Impact of design features upon perceived tool usability and safety. In Optics East 2005 (pp. 59990R-59990R). International Society for Optics and Photonics.

14. Wiker, S. F. (2005) Challenges facing developers of CAD/CAM models that seek to predict human working postures. Intelligent Systems in Design and Manufacturing VI, International Society for Optical Engineering, Boston, MA, October 23-26.

15. Wiker, S. F., Schwerha, D., & Jaraiedi, M. (2006, October). Impact of Auditory and Visual Distractors upon Manual Assembly Task Learning among Older Workers with Different Levels of Spatial Reasoning and Field Dependence. In Proceedings of the Human Factors and Ergonomics Society Annual Meeting (Vol. 50, No. 2, pp. 200-204). Sage Publications.

16. Wiker, S. F. (2004) Reduction of musculoskeletal discomfort and mental fatigue in lumber graders: Comparative efficacy of distributed breaks and job rotation. Presented at Occupational Safety and Health Administration's National Advisory Council on Ergonomics, January 27-28, Washington, DC

17. Wiker, S. F. (2003) Manual materials handling injuries and impact upon posture prediction. Grand Rounds, Occupational Medicine, West Virginia University, May 15th.

18. Wiker, S. F. and Thompson, J. (1999) Reduction of musculoskeletal discomfort and mental fatigue in lumber graders. Pacific Northwest Occupational and Environmental Medicine Annual Conference, Timberline, OR.

19. Wiker, S. F. (1999) Aging and manual materials handling tasks. National Ergonomics Conference and Exposition. December 6-10, Anaheim, California.

20. Wiker, S. F. (1997) Successful application of biomechanical models in the design of products and workplaces. SAE Aerospace Manufacturing Technology Conference and Exposition. June 2-5, Seattle, Washington.

21. Griffith, J. T. and Wiker, S. F. (1997) Workstation design and risk of back injury during various load-handling scenarios: A study of patient handling. SAE Aerospace Manufacturing Technology Conference and Exposition. June 2-5, Seattle, Washington.

22. Wiker, S. F. (1997) The relationship between portable hand-held grinders and risk of carpal tunnel syndrome. SAE Aerospace Manufacturing Technology Conference and Exposition. June 2-5, Seattle, Washington.

23. Spielholz, P., & Wiker, S. F. (1996, October). Reports of regional body discomfort during carpenter apprentice training. In Proceedings of the Human Factors and Ergonomics Society Annual Meeting (Vol. 40, No. 13, pp. 688-692). SAGE Publications.

24. Wiker, S. F., Baker, D. R., Arndt, S. R., & Zhou, W. (1996, October). Impact of Varying Levels of Autostereovision upon Telemanipulation. In Proceedings of the Human Factors and Ergonomics Society Annual Meeting (Vol. 40, No. 22, pp. 1141-1145). SAGE Publications.

25. Wiker, S. F. (1994) Ergonomic guidelines for prevention of back injuries–fact and fiction. Northwest Occupational Health Conference, Bellevue, Washington, USA, October 14.

26. Wiker, S. F. (1994) Preventing musculoskeletal injuries in the construction industry. Northwest Construction Safety Conference, Tacoma, Washington, USA, September 12 th.

27. Wiker, S. F. and Arndt, S. R. (1994) Validation and analysis of TPAS: A psychomotor test-battery proposed for evaluating and gauging disability in the upper extremities. Rehabilitation Ergonomics Conference, 12th Triennial Congress of the International Ergonomics Association, Toronto, Canada, August 15-19.

28. Wiker, S. F. and Vanderheiden, G.(1994) Analysis of haptic display design characteristics and their impact upon perception of graphical imagery and semantic information. Rehabilitation Ergonomics Conference, 12th Triennial Congress of the International Ergonomics Association, Toronto, Canada, August 15-19.

29. Wiker, S. F. and Chen, A. (1994) Analysis of required lift geometry, load, and initial stance upon prediction of semi-freestyle lifting postures. Computer-Aided Engineering and Safety Conference, 12th Triennial Congress of the International Ergonomics Association, Toronto, Canada, August 15-19.

30. Zhou, W., Duffie, N.A., and Wiker, S. F. (1994) Control of grasping force in teleoperation using model reference adaptive approach. Society of Automotive Engineers and American Institute of Aeronautics and Astronautics International Conference on Environmental Systems Conference, Friedrichshafen, Germany, June 21-24.

31. Wiker, S.F. and Chen, A. (1994) Accuracy and efficacy of using pictograms for self-report of postures assumed when performing lifting tasks. Annual International Industrial Ergonomics and Safety Conference, June 7-10, San Antonio, Texas.

32. Malzahn, D. E., Wiker, S. F., Vanderheiden, G. C., & Freivalds, A. (1994). Educating People With Disabilities. In PROCEEDINGS OF THE HUMAN FACTORS AND ERGONOMICS SOCIETY ANNUAL MEETING (Vol. 1, pp. 417-417). HUMAN FACTORS AND ERGONOMICS SOCIETY.

33. WIKER, S., HERSHKOWITZ, E., & ZIK, J. (1989). Teleoperator comfort and psychometric stability: Criteria for limiting master-controller forces of operation and feedback during telemanipulation. In JPL, California Inst. of Tech, Proceedings of the NASA Conference on Space Telerobotics, (Vol. 1).

34. WIKER, S., KENNEDY, R., MCCAULEY, M., & PEPPER, R. (1979). Reliability, validity and application of an improved scale for assessment of motion sickness severity[Final Report, Apr. 1978- May 1979].

35. Wiker, S. F. and Fuerlinger, S. (1994) Impact of cyclic pinch grasp force, duration and frequency upon perceived grasp force and localized discomfort in the hand and arm. Annual International Industrial Ergonomics and Safety Conference, June 7-10, San Antonio, Texas.

36. Zhou, W., Duffie, N.A., and Wiker, S. F. (1993) Identification of human grasp dynamics in teleoperation. Presented at the Annual Space Programs and Technologies Conference, Huntsville, AL, Sep 22.

37. Wiker, S. F., Duffie, N.A., Arndt, S. and Murray, S. (1993) Applications of the Telerobotic Performance Analysis System (TPAS). Presented at the Annual Space Programs and Technologies Conference, Huntsville, AL, Sep 22.

38. Lee, S., Wiker, S. F. and G.C. Vanderheiden (1993) Interactive haptic interface: Two- dimensional form perception for blind access to computers. Presented at the Human Computer Interface Conference, Orlando, Florida, August 9-13th.

39. Wiker, S. F. (1993) Telemanipulation: Master-controller design issues. Presented at the Human Computer Interface Conference, Orlando, Florida, August 9-13th.

40. Wiker, S. F. (1993) Teaching ergonomic theory and practice using computer models. Presented at the International Conference on Simulation in Engineering Education, La Jolla, CA, January 17-20.

41. Wiker, S. F., Vanderheiden, G. and Lee, S. (1992) Development of tactile displays for blind access to computers: Importance of blindness, display locus, size, and resolution upon haptic exploration of two-dimensional graphic images. Annual Meeting of the Human Factors and Ergonomics Society, October 5-10, Atlanta, Georgia.

42. Wiker, S. F. and Stultz, M. (1992) NIOSH Work Practices Guide for Manual Lifting: Posturally-based differences in perceived stress in lifting tasks of equivalent design merit. Presented at the Annual International Industrial Ergonomics and Safety Conference, June 10-14, Denver, Colorado.

43. Wiker, S. F. and Lee, S. (1992) Control and gauging grasp force in telemanipulators: A comparison of direct force and electrocutaneous display systems. Presented at the Annual International Industrial Ergonomics and Safety Conference, June 10-14, Denver, Colorado.

44. Wiker, S. F., Jones, T., Baker, S., Myers, A., Smith, G. and Edwards, C. (1992) Measurement of indices of ergonomic stress in an epidemiological study of municipal workers. Presented at the Annual International Industrial Ergonomics and Safety Conference, June 10-14, Denver, Colorado.

45. Smith, G. S., Myers, A. H., Baker, S. P., Li, G. Edwards, C. A., Liang, K. Y., Johnson, J. V. and Wiker, S. F. (1992) Health-related risk factors for back injuries and their medical consequences. Presented at the Annual International Industrial Ergonomics and Safety Conference, June 10-14, Denver, Colorado.

46. Myers, A. H., Baker, S. P., Wiker, S. F., Liang, K. Y., Li, G. Smith, G. S. Johnson, J. V. and Edwards, C. A. (1992) Factors related to low-back injuries in municipal workers. Presented at the Annual International Industrial Ergonomics and Safety Conference, June 10-14, Denver, Colorado.

47. Baker, S. P., Jones, T. M., Myers, A. H., Wiker, S. F., Smith, G., Corn, M., Sznajder, J. (1992) Prevention of back injuries in municipal workers. Presented at the Annual International Industrial Ergonomics and Safety Conference, June 10-14, Denver, Colorado.

48. Wiker, S. F. (1992) Developing multivector autoregressive models to plan and evaluate work schedules in hot environments. Presented at the First Annual IIE Research Conference, Chicago, IL, May 20-21.

49. Wiker, S. F. (1992) Posturally-mediated perceptions of strain encountered when lifting: A preliminary analysis of the basis and value in predicting worker posture. Presented at the Computer Aided Ergonomics and Safety Conference, Tampere, Finland, May 18-20.

50. Wiker, S. F. (1992) Grasp force control in telemanipulation. Presented at the American Institutes of Aeronautics & Astronautics Space Programs and Technologies Conference, Huntsville, Alabama, March 25 th, 1992.

51. Wiker, S. F., Duffie, N., & Yen, T. (1992, January). Importance of numerosity and distribution of articulations within the digits, wrists, and arms of telemanipulators confronted with dextrous assembly tasks. In 5th Annual Workshop on Space Operations Applications and Research (SOAR 1991) (Vol. 1, p. 310).

52. Wiker, S. F., & Duffie, N. A. (1990, June). Grasp force control in telemanipulation. In Annual NASA & USAF Space Operations Automation and Robotics Conference, Alburquerque, NM Jun (Vol. 25, p. 28).

53. Wiker, S. F. (1990) Telerobotic Design Issues. Invited Presentation at the Annual Meeting of the Industrial Engineering Society, San Francisco, CA, May 20-23 rd.

54. Wiker, S. F. (1989). Don B. Chaffin Center for Ergonomics The University of Michigan, Ann Arbor, MI 48109. In Advances in Industrial Ergonomics and Safety: Proceedings of the Annual International Industrial Ergonomics and Safety Conference Held in Cincinnati, Ohio, USA, 5-9 June 1989, the Official Conference of the International Foundation for Industrial Ergonomics and Safety Research (Vol. 1, p. 129). Taylor & Francis.

55. Wiker, S. F., Kennedy, R. S. and Pepper, R. L. (1981) Performance evaluation tests for environmental research (PETER): Navigation plotting task. Presented at 52 nd Annual Scientific Meeting of the Aerospace Medical Association, San Antonio, TX 4-7 May.

56. Pepper, R. L., Kennedy, R. S., Bittner Jr., A. C. and Wiker, S. F. (1980) Performance evaluation tests for environmental research (PETER): Code substitution test. Seventh Psychology in the Department of Defense Symposium, U. S. Air Force Academy, 16-18 April.

57. Pepper, R. L. and Wiker, S. F. (1979) Repeated assessment of stress, mood and performance changes resulting from exposure to vessel motions at sea. Presented at Annual Human Factors Society, Boston, MA, October.

58. Wiker, S.F. and Pepper, R.L. (1978) Change in crew performance, physiology and affective state due to motions aboard a small monohull vessel: A preliminary study. Presented at the Society of Naval Architects and Marine Engineers, Honolulu, HI, 4 October.

TEACHING ACTIVITY

CLASSES TAUGHT AT WEST VIRGINIA UNIVERSITY

1. IMSE 360 Human Factors Engineering, Dept. Industrial and Management Systems Engineering, West Virginia University
2. IMSE 564 Industrial Ergonomics, Dept. Industrial and Management Systems Engineering, West Virginia University
3. IMSE 660 Advanced Human Factors Engineering, Dept. Industrial and Management Systems Engineering, West Virginia University
4. IMSE 668 Special Problems in Human Factors Engineering, Dept. Industrial and Management Systems Engineering, West Virginia University
5. IMSE 220 Reengineering (Work Measurement), Dept. Industrial and Management Systems Engineering, West Virginia University
6. Independent Study in Ergonomics and Safety Engineering
7. Doctoral and Masters Thesis Research

CLASSES TAUGHT AT UNIVERSITY OF WASHINGTON

1. INDE 541 Advanced Human Factors Engineering, Industrial Engineering, University of Washington
2. ENHV 566 Introduction to Ergonomics, Dept. of Environmental Health, University of Washington
3. ENVH 569 Occupational Biomechanics, Dept. of Environmental Health, University of Washington
4. ENVH 562 Technical Aspects of Safety Engineering, Dept. of Environmental Health, University of Washington
5. INDE 599 Independent Study in Ergonomics and Safety Engineering
6. Doctoral and Masters Thesis Research

COURSES DEVELOPED AND TAUGHT AT UNIVERSITY OF WISCONSIN

1. IE 549 Human Factors Engineering, Department of Industrial Engineering, University of Wisconsin
2. IE 664 Advanced Ergonomics, Department of Industrial Engineering, University of Wisconsin
3. IE 665 Advanced Ergonomics Laboratory, Department of Industrial Engineering, University of Wisconsin
4. IE 859 Seminar: Human Factors Engineering (Telerobotics), Department of Industrial Engineering, University of Wisconsin
5. IE 859 Seminar: Human Factors Engineering (Bioinstrumentation & Laboratory Safety), Department of Industrial Engineering, University of Wisconsin
6. IE 859 Seminar: Human Factors Engineering (Perceptual-Motor Skill Theory), Department of Industrial Engineering, University of Wisconsin
7. Independent Study in Ergonomics and Safety Engineering
8. Doctoral and Masters Thesis Research

JOURNAL CLUBS

1. Ergonomics & Safety Engineering

STUDENTS GRADUATED

DOCTORAL STUDENTS (COMMITTEE CHAIR)

1. Tom McDowell, Ph.D., Occupational Safety and Health, Industrial & Management Systems Engineering, West Virginia University 2006
2. Diana Schwerha, Ph.D., Industrial & Management Systems Engineering, West Virginia University 2004
3. Steven Arndt, Ph.D., Industrial Engineering, University of Wisconsin 1996
4. Seongil Lee, Ph.D., Industrial Engineering, University of Wisconsin 1994

DOCTORAL STUDENTS (COMMITTEE MEMBER)

1. Edgar Vieira, Ph.D., Rehabilitation Medicine, University of Alberta, 2006
2. Weijia Zhou, Ph.D., Mechanical Engineering, University of Wisconsin 1994
3. Roger Smith, Ph.D. Industrial Engineering, University of Wisconsin 1994
4. Seoung Kwon Kim, Ph.D. Physical Education, University of Wisconsin 1993
5. Jon Gunderson, Ph.D. Industrial Engineering, University of Wisconsin 1991
6. Kurt A. Kaczmarek, Ph.D. Electrical Engineering, University of Wisconsin 1991
7. Naomi Swanson, Ph.D. Industrial Engineering, University of Wisconsin 1988

MASTERS STUDENTS (COMMITTEE CHAIR)

1. Ashok Dwarkanath, MSIE, Industrial & Management Systems Engineering, Industrial & Management Systems Engineering, 2006.
2. Vivianna Baggio, MSIE, Industrial & Management Systems Engineering, Industrial & Management Systems Engineering, 2006.
3. Mun-Su Seol, MS Safety Management, Industrial & Management Systems Engineering, West Virginia University, 2005
4. Nicolas Salazar, MS Industrial Hygiene, Industrial & Management Systems Engineering, West Virginia University, 2004
5. Astrid Schreuder, MSIE Industrial Engineering, University of Washington 1997
6. Theresa Lango, MS Environmental Health, University of Washington 1997
7. Tommey Meyers, MS Environmental Health, University of Washington 1997
8. Jason Griffith, MSE Industrial Engineering, University of Washington 1996
9. Patrice Miner, MS Environmental Health, University of Washington 1995
10. Larry Shaw, MS Environmental Health, University of Washington 1994

11. Susan Fuerlinger, MSIE Industrial Engineering, University of Wisconsin 1993
12. An-Che Chen, MSIE Industrial Engineering, University of Wisconsin 1992
13. Tim Jones, MS Industrial Engineering, University of Wisconsin 1991
14. Mark Stultz, MS Industrial Engineering, University of Wisconsin 1991
15. Thomas Yen, MSIE Industrial Engineering, University of Wisconsin 1991
16. Steven Arndt, MS Industrial Engineering, University of Wisconsin 1991
17. Yueh-Chuan Kung, MSIE Industrial Engineering, University of Wisconsin 1990

MASTERS STUDENTS (COMMITTEE MEMBER)

1. Jason Sanders, MS Environmental Health, University of Washington 1996
2. John Jerney, MSE Mechanical Engineering, University of Wisconsin 1993
3. Hwa-Ping Chang, MSE Mechanical Engineering, University of Wisconsin 1990

CONTINUING EDUCATION

COURSE DIRECTOR & INSTRUCTOR

1. Advances in Ergonomics, May 8, 1997, Northwest Center for Occupational health and Safety, Department of Environmental Health, School of Public Health and Community Medicine, University of Washington, Seattle, WA, 98195.
2. Office Ergonomics, January 27-28, 1994, Northwest Center for Occupational health and Safety, Department of Environmental Health, School of Public Health and Community Medicine, University of Washington, Seattle, WA, 98195.
3. Ergonomics for Managers, January 26, 1994, Northwest Center for Occupational health and Safety, Department of Environmental Health, School of Public Health and Community Medicine, University of Washington, Seattle, WA, 98195.
4. Ergonomics Workshop, 1991, Phelps Dodge Magnet Wire Corporation, Fort Wayne, IN. 5. Ergonomics Workshop, 1991, Association of American Railroads, Washington, DC.

COURSE INSTRUCTOR

1. Occupational Health, Occupational Medicine, West Virginia University, June 21-22, 2004
2. Occupational Hazards to Health Care Workers, 1994, Northwest Center for Occupational Health and Safety, Seattle, WA.
3. Office Ergonomics, 1994, Execu-Tech Services and Boise-Cascade, Seattle, WA.
4. Human Factors Engineering Issues in Product Liability, 1991, Products Liability Course, School for Continuing Education, University of Wisconsin, Madison, WI.

DEPARTMENTAL, COLLEGE AND PROFESSIONAL SERVICE ACTIVITIES

DEPARTMENTAL UNIVERSITY ACTIVITIES AT WEST VIRGINIA UNIVERSITY

1. Faculty Advisor, Alpha Pi Mu, 2003-2006
2. Graduate Committee Member, 2003-2010
3. Faculty Promotion and Tenure Committee, 2004-2006
4. Undergraduate Committee Member, 2003-2005
5. Undergraduate Committee Chair 2005-2006
6. Chair, Faculty Search Committee 2005-2006
7. Outside Funding 2003-2008
8. NASA WV Space Grant Undergraduate Research Project Advisor 2005-2006

COLLEGE AND UNIVERSITY ACTIVITIES AT WEST VIRGINIA UNIVERSITY

1. Undergraduate Research Day Advisor 2005, 2006
2. Member, Advisor of Year 2004 Committee 2005
3. Library Committee Member, 2003-2005, 2007-2009
4. Chair, CEMR Faculty Executive Committee, 2005-2007

UNIVERSITY AFFILIATIONS AND ACTIVITIES AT PREVIOUS UNIVERSITIES

1. Department, Admissions Committee Member 1993-1997
2. Member, Promotion and Tenure, 1993-1997
3. Development Committee, 1993-1997
4. Faculty Member, Manufacturing Systems Engineering Program, 1988-1993
5. Faculty Member, University of Wisconsin Institute on Aging & Adult Life, 1988-1993
6. Member, Undergraduate Committee, 1991 to 1993
7. Faculty Advisor, Alpha Pi Mu, 1988-1992
8. Faculty Senator, Department of Industrial Engineering 1990 to 1991
9. Alternate Faculty Senator, Department of Industrial Engineering 1989-90
10. Chair, Liaison Committee for Statistics, 1989 to 1991
11. Engineering Day Committee 1991-1993
12. College of Engineering's Committee on Ethics, Ethnics, and Social Responsibility, 1989- 90